



State of Utah
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING

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October 12, 1994

TO: Board of Oil, Gas and Mining

THRU: James W. Carter, Director *JC*

THRU: Lowell P. Braxton, Associate Director, Mining *LPS*

FROM: D. Wayne Hedberg, Permit Supervisor *DWH*

RE: Request for Board Concurrence/Approval, Amount and Form of Reclamation Surety, Kennecott Corporation, Barneys Canyon Mine - Permit Revision, M/035/009, Salt Lake County, Utah

On March 1, 1994, the Division received a permit revision application from Kennecott Corporation for an expansion of their Barneys Canyon Mine. The application was tentatively approved by the Division on August 26, 1994. The 30-day public notice expired on September 30, 1994. No substantive comments were received during the public notice period. Kennecott is expanding their mining operation by approximately 363 new acres of disturbance. A revised surety bond "rider" has been provided by Safeco Insurance Company in the amount of \$4,600,000. This surety will cover the estimated decommissioning and reclamation costs associated with this open pit gold mining/heap leaching project. Following the Board's acceptance and approval of the amount and form of replacement surety, the Division will forward its final approval to Kennecott allowing the proposed expansion activities to commence.

*\$3,020,000
old amt.*

Please find the following attachments to assist you in your evaluation of this request:

1. Summary Checklist
2. Revised Executive Summary
3. Location Map
4. Revised Reclamation Surety Estimate
5. Reclamation Contract (updated)
6. Surety bond rider (from \$3,020,000 to \$4,600,000)

Thank you for your time and consideration of this request.

jb
attachments
M035009.brd



DOGM MINERALS PROGRAM

Summary Checklist for Board Approval FORM and AMOUNT of RECLAMATION SURETY

Company/Operator: Kennecott Corporation
 Mine Name: Barney' Canyon Mine - Permit Revision
 File Number: M/035/009

Item	Provided		Comments
	Yes	No	
Executive Summary	X		
Location Map	X		
Revised Reclamation Surety Estimate		X	Kennecott's revised surety calculations are acceptable to DOGM. DOGM believes updated average \$'s/acre reclamation costs are conservative. Therefore, a revised DOGM estimate wasn't prepared (see operator's revised surety calculations from mine plan surety section, copy attached).
Signed Reclamation Contract	X		
Signed Power of Attorney/ Affidavit of Qualification	X		
Surety Bond	X		Bond Rider increasing amount to \$4,600,000
Surety Sign off (Other State/Federal Agencies)		X	N/A
RDCC Notified	X		

M035009.brn

6.0 VARIANCE REQUESTS

6.1 Variance Request from Rule R613-004-111.9 Dams and Impoundments

6.2 Variance Request from Rule R612-004-111.6 Slopes

6.3 Variance Request from Rule R613-004-111.7 Highwalls

6.4 Variance Request from Rule R613-004-111.2 Drainages

6.5 Variance Request from Rule R613-004-111.12 and 111.13 Topsoil Redistribution and Revegetation

7.0 RECLAMATION COST ESTIMATE

The previous cost estimate of \$3,604 per acre in 1992 dollars was escalated to 1994 dollars by using the consumer price index of 1.027 for 1992 and 1.03 for 1993 resulting in an updated cost of \$3,812 dollars per acre. The previously permitted disturbance area was added to the incremental disturbance area for the Melco and NBCS expansion resulting in a total project disturbance area requiring reclamation as follows:

Currently permitted area requiring reclamation	= 769.5 acres
Expansion area requiring reclamation	= <u>302.4 acres</u>
Total project area requiring reclamation	= 1,071.9 acres

The reclamation cost estimate was adjusted using the Division's current annual escalation factor of 2.10% for 5 years. This results in a multiplier of 1.110 for all 5 years or a reclamation cost of \$4,231 per acre in 1999 dollars ($\$3,812 \times 1.110 = \$4,231$). The existing reclamation bond will be increased to 4.6 million dollars ($1,071.9 \text{ acres} \times \$4,231 \text{ per acre} = \$4,535,209$).

8.0 REFERENCES

JBR Consultants Group, 1988, Notice of Intent to Commence Mining Operations, Kennecott Explorations (Australia) Ltd., Barney's Canyon Project, submitted to Utah Division of Oil Gas and Mining (Revised, September, 1989).

U.S.D.A., Soil Conservation Service, April 1974, Soil Survey of Salt Lake Area, Utah.

APPENDIX C-III

Soil Chemistry Descriptions for Melco North Dump Area

Executive Summary

Last revised October 4, 1994

Mine Name: Barney's Canyon Mine - Permit Revision/Expansion I.D. No: M/035009
Operator: Kennecott Corporation County: Salt Lake
P.O. Box 311
Bingham Canyon, UT. 84006-0311 New/Existing: Existing (original approval 1989)
Contact Person: David I. Hodson, General Manager Mineral Ownership: Private
Telephone: (801) 569-7200 Surface Ownership: Kennecott
Permit Term: Life of Mine Lease No.(s): N/A
Life of Mine: to the year 1999-2000 (based upon present ore reserves)

Legal Description: Project Expansion will impact lands located within portions of the following sections: Township 3 South, Range 3 West, Sections 2 (S1/8 & N1/2), 3 (N1/2) and 11 (NW1/4), Township 2 South, Range 3 West, Sections 34 and 35 (S1/8), SLBM, Salt Lake County, Utah.

Mineral(s) to be Mined: Gold, Silver

Mining Methods: Open Pit Mining - Cyanide Heap Leach Operation

Acres to be Disturbed: 707 acres approved (1989), @218 new acres approved (1992 revision), @363 new acres proposed under this revision [363 - 61(new highwalls, not reclaimed) = 302 acres requiring reclamation]. Total mine distance is now @1288 acres. [1288 acres - @216 (principally pit highwalls) = @1072 acres requiring reclamation and bond].

Present Land Use: Wildlife Habitat, surface mining, mineral processing and mineral exploration activities.

Postmining Land Use: Wildlife Habitat and Livestock Grazing

Soils and Geology:

Soil Description: All of the soils are very gravelly and/or cobbly. Textures range from loams to silt or clay loams to silty clays, organic matter above 1%. Project expansion area - 2 main soil associations in Barneys Canyon extended study area are: Bradshaw-Agassiz and the Gappmayer-Wallsburg associations. Deep alluvial soils in canyon bottoms, shallow to non-existent soil resources on ridgetops and steep slope rock outcrops.

Variances from Reclamation Standards (Rule R647) Granted: R647-4-107.5 (Soils), R647-4-111.6 (Slopes), R647-4-111.7 (Highwalls), R647-4-111.12 (Topsoil Redistribution), and R647-4-111.13 (Revegetation). No new variances are requested under this project expansion. All variances previously approved.

pH: 5.78 - 7.73

Special Handling Problems: Phosphorus is deficient, moderate to high erosion potential, some shallow soils on steep terrain cannot be safely removed and stockpiled.

Geology Description: Project area located east edge of Paleozoic core of Oquirrh Mtns. Barneys Cyn. deposit occurs in Permian dolomite of Park City Formation and underlying calcareous sandstone of Permian Kirkman-Diamond Creek Formation. Melco deposit occurs in Permian calcareous sandstones of Kirkman-Diamond Creek Formation and underlying orthoquartzite of Freeman Peak Formation. The BC South deposits are hosted in Kirkman-Diamond Creek Sandstone near contact with orthoquartzites of underlying Freeman Peak Formation. Gold mineralization hosted in moderately dipping, clay-rich zones of slip and brecciation within interlayered sandstone and orthoquartzite.

Hydrology:

Ground Water Description: Overall project area is located in a general recharge area for underlying aquifers. Depth to the confined bedrock aquifer in project processing facilities area is approximately 165 feet. *Extensive exploration drilling in the expanded Melco pit area indicates that the depth to the local water table is @6070 feet AMSL. The final Melco Pit depth will be at 6460 feet AMSL or roughly 400 feet above the local water table. The majority of highwall runoff will be collected and diverted out of the pit to the north and south, because the pit design daylights on both ends.* The local water table in vicinity of proposed BC South pits is estimated at 6200 to 6400 feet AMSL. Final pit depths for the North BC South and South BC South pits are 6475 and 6575 feet AMSL, respectively.

Surface Water Description: Barney's Creek is intermittent to perennial (2 mi. reach), is adjacent to the process facilities area and drains into Jordan River. Other small, intermittent and ephemeral drainages in the project area of minimal flow. One spring is located in general area (Bancroft Spring).

Water Monitoring Plan: To be determined by the State Department of Environmental Quality, Division of Water Quality pursuant to Ground Water Discharge Permit.

Ecology:

Vegetation Type(s); Dominant Species: Project Area Expansion - involves steep canyon walls and bottoms, both north and south facing slopes. Douglas Fir, quaking aspen, and intermingled heavy stands of gambel oak and curl-leaf mountain mahogany shrubs characterize north aspects. South aspects mostly support pure gambel oak stands, and on rocky soils and outcrops, curleaf mountain mahogany stands. Steep drainages on south-facing slopes and canyon bottom are dominated by bigtooth maple./chokecherry riparian community. Sagebrush also exists at all south-facing slope elevations associated mostly with the gambel oak community. Understory vegetation consists of numerous grasses and forbs (see mine plan for species identification).

Percent Surrounding Vegetative Cover: Cover varies depending on community type and ranges from 50 - 70%.

Wildlife Concerns: Some temporary losses of deer and elk winter range habitat until ultimate reclamation and successful revegetation occurs.

Surface Facilities: Overall Project Area: Barney's Canyon, Melco, North and South BC South pits, associated mine dumps, haul/access roads, processing plant site - includes ore crushing and agglomerating plant, several heap leach pads, a leachate processing plant and refinery, processing solution ponds, a sulfide flotation plant, offices and maintenance shops, and associated processing facilities. *Actual project expansion will involve: expanding the size and depth of the North BC South and Melco pits, creating a series of new waste dumps north of the current Melco pit, redesigning of the permitted 7200 dump and construction of a new haul road from the north side of the expanded Melco pit down to the North BC South pit.*

Mining and Reclamation Plan Summary:

During Operations:

Kennecott will continue to mine gold ore using typical open pit mining methods. Prior to mine expansion, sufficient topsoil resources will be salvaged and stockpiled for final reclamation of the disturbed areas.

A sulfide flotation plant, approved by the Utah State Division of Water Quality, was constructed on previously disturbed ground and will be reclaimed in accordance with the permit conditions. The Sulfide waste rock will be handled in accordance with the approved Sulfide Waste Rock Management Plan and the existing Division of Water Quality ground water discharge permit,

All other aspects of the site will continue as previously permitted.

Mining commenced in 1989 and is anticipated to continue through 1999-2000. The heap leaching operation will be operated for approximately one year after mining has ceased. The majority of the reclamation activities will commence concurrently with the cessation of mining operations.

After Operations:

Pit highwalls will not be reclaimed. Accessible pit benches will be reclaimed/revegetated. All related surface facilities/structures will be removed. Regrading, placement of topsoil and revegetation will take place on the waste dumps, roads and other disturbed areas associated with this project expansion according to the approved reclamation plan. All other aspects of the approved reclamation plan for the balance of the mining operation remain unchanged.

Surety :

Amount: \$4,600,000 (1999 dollars)

Form: Surety bond (Safeco Insurance Company of America)

Renewable Term: 5 years - 1999

BARNEYS CANYON PROJECT

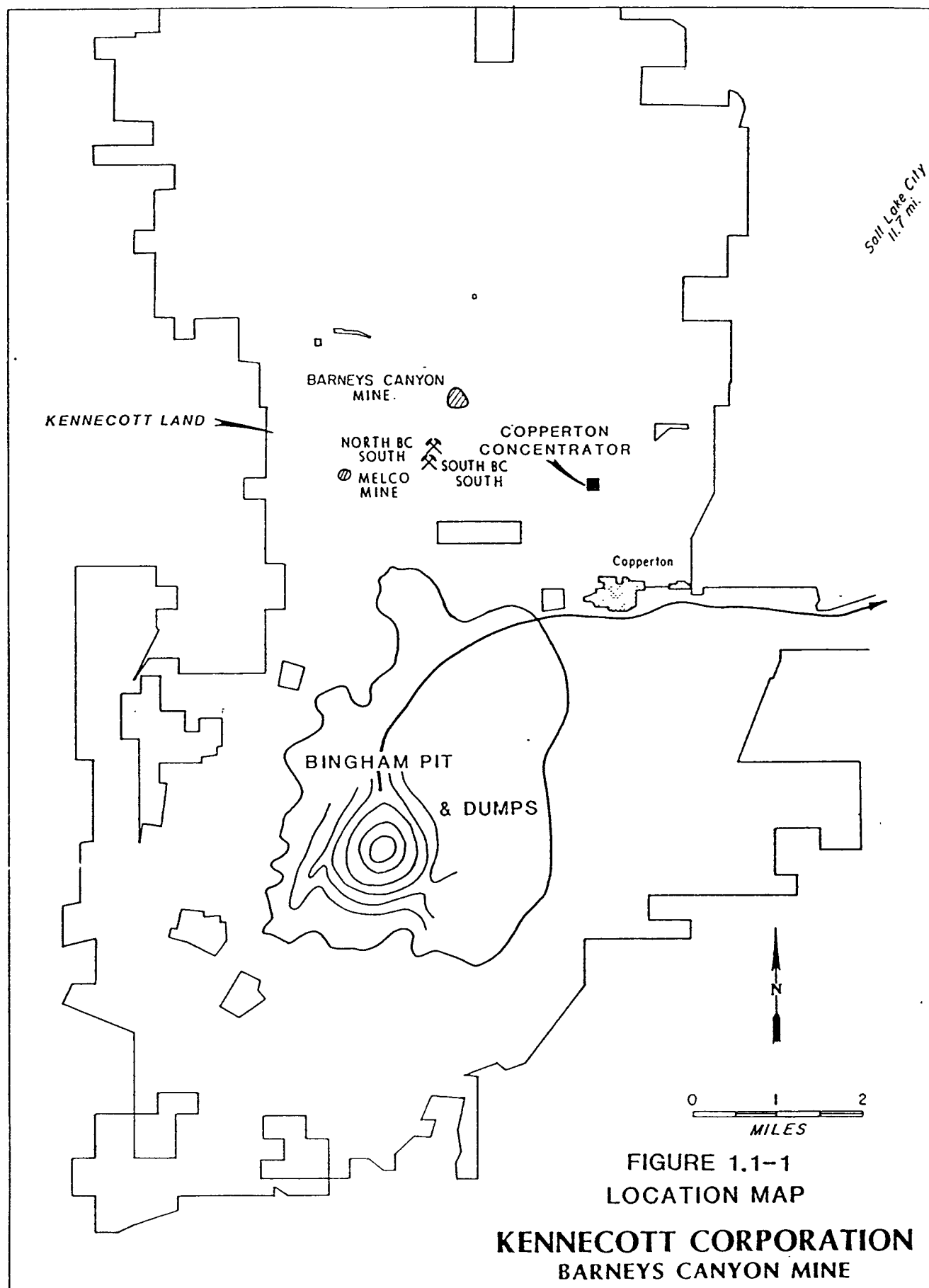
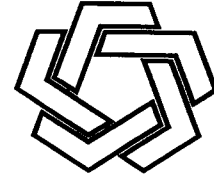


FIGURE 1.1-1
LOCATION MAP

KENNECOTT CORPORATION
BARNEYS CANYON MINE

MINE SITE LOCATION MAP



Division of Oil, Gas and Mining
October 12, 1994

KENNECOTT CORPORATION
BARNEYS CANYON GOLD MINE
M/035/009

